

Appl. No. 10/824,466
Amendment dated: March 6, 2006
Reply to OA of: November 7, 2005

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A method of manufacturing a continuous ~~[[foam]]~~ foamed sheet from a thermoplastic elastomeric composite ~~in atmosphere under one atmospheric pressure~~, comprising the steps of:

using a thermoplastic elastomer as a ~~raw material~~ substrate of the thermoplastic elastomeric composite;

adding ~~different additive additives~~, foaming agent~~[[,]]~~ and crosslinking agent into the ~~raw material~~ substrate to form the thermoplastic elastomeric composite;

kneading and rolling the ~~raw material~~ thermoplastic elastomeric composite for forming a continuous sheet by means of conventional rubber continuous foaming techniques and devices;

~~cutting the continuous sheet and weighing the sheets to an oven~~ conveying the continuous sheet to an oven;

~~foaming the heated sheet in a normal pressure; and enabling the continuous sheet to be baked in the oven and to foam under the one atmospheric pressure; and~~

cooling the continuous foamed sheet foamed under the one atmospheric pressure to produce the continuous ~~[[foam]]~~ foamed sheet.

2(currently amended). The method of claim 1, wherein the substrate thermoplastic elastomer as the raw material is selected from a is a styrenic thermoplastic elastomer including a styrene butadiene styrene (SBS), a styrene-ethylene/butene-styrene (SEBE), a styrene isoprene styrene (SIS), and a styrene ethylene propylene styrene (SEPS) having a percentage ~~[[about]]~~ ranged from 50% to 100% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

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3(currently amended). The method of claim 2, wherein the thermoplastic elastomer elastomeric composite further comprises ~~other polymeric materials~~ material including styrene butadiene rubber (SBR), polystyrene (PS), ethylene vinyl acetate (EVA), low density polyethylene (LDPE), ~~[[and]]~~ or ethylene-propylene-diene terpolymer rubber (EPDM) having a percentage ~~about~~ ranged from 0% to 50% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

4(currently amended). The method of claim 2, wherein components of the thermoplastic elastomeric composite in ~~[[a]]~~ predetermined weight percentage percentages are poured into the conventional devices for uniformly mixing by kneading and rolling in a temperature ranged from ~~[[about]]~~ 90°C to 130°C.

5(currently amended). The method of claim 4, wherein the continuous sheet is baked in the oven in a temperature ranged from ~~[[about]]~~ 150°C to 180°C ~~in a normal pressure for~~ under the one atmospheric pressure for a predetermined period of time for foaming the continuous sheet to produce ~~a foam material~~ the continuous foamed sheet.

6(currently amended). The method of claim 2, wherein the foaming agent is ~~selected from~~ a chemical foaming agent (~~e.g.,~~ including azodicarbonamide~~[[]]~~) or a physical foaming agent including sodium bicarbonate having a percentage ~~[[about]]~~ ranged from 1% to 15% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

7(currently amended). The method of claim 6, wherein the ~~crossing~~ crosslinking agent is ~~selected from~~ a dicumyl peroxide, 2,5-(tert-butylperoxide)-2,5-dimethylhexane or sulfur having a percentage ~~[[about]]~~ ranged from 0.1% to 1% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

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8(currently amended). The method of claim 7, wherein the thermoplastic ~~elastomer~~ elastomeric composite further comprises ~~accelerator~~ accelerator for foaming agent ~~selected from a~~ including zinc oxide or urea having a percentage ~~[[about]]~~ ranged from 0% to 3% of the total weight of the ~~raw material~~ substrate.

9(currently amended). The method of claim 7, wherein the thermoplastic ~~elastomer~~ elastomeric composite further comprises a processing agent ~~selected from~~ including stearate or hard zinc based stearate.

10(currently amended). The method of claim 7, wherein the thermoplastic ~~elastomer~~ elastomeric composite further comprises an additive including a coloring agent, a calcium carbonate, and wood chips.

11(currently amended). The method of claim 7, wherein the thermoplastic ~~elastomer~~ elastomeric composite further comprises ~~[[an]]~~ a functional additive ~~selected from~~ including an anti-static agent, a flame retardation agent, or a reinforced agent having a percentage ~~[[about]]~~ ranged from 0.1% to 50% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

12(currently amended). A method of manufacturing a ~~continuous foam~~ foamed block from a thermoplastic elastomeric composite ~~in atmosphere~~ under one atmospheric pressure, comprising the steps of:

using a thermoplastic elastomer as a ~~raw material~~ substrate of the thermoplastic elastomeric composite;

adding ~~different additive~~ additives, foaming agent~~[[,]]~~ and crosslinking agent into the ~~raw material~~ substrate to form the thermoplastic elastomeric composite;

kneading and rolling ~~above materials~~ the thermoplastic elastomeric composite for forming a continuous sheet by means of conventional rubber continuous foaming techniques and devices;

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cutting the continuous sheet into a plurality of ~~sheet members~~ sheets with a predetermined size;

stacking a ~~selected weight of the sheet members depending on requirements~~ predetermined number of sheets in a heat mold for hot mold pressing and then obtaining a molded block;

~~cutting the selected weight of the sheet members to a mold to heat for forming a blank~~ conveying the molded block to an oven;

~~cutting the blank to an oven to foam in a normal pressure~~ enabling the molded block to be baked in the oven and to foam under the one atmospheric pressure; and

cooling the block foamed ~~[[blank]]~~ under the one atmospheric pressure to produce a ~~foam material~~ foamed block having a predetermined shape.

13(currently amended). The method of claim 12, wherein the ~~thermoplastic elastomer as the raw material is selected from a~~ substrate is styrenic thermoplastic elastomer including styrene butadiene styrene (SBS), styrene-ethylene/butene-styrene (SEBS), styrene isoprene styrene (SIS), or styrene ethylene propylene styrene (SEPS) having a percentage ~~[[about]]~~ ranged from 50% to 100% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

14(currently amended). The method of claim 13, wherein the components of the thermoplastic elastomeric composite in ~~[[a]]~~ predetermined weight percentage percentages are poured into the conventional devices for uniformly mixing by kneading and rolling in a temperature ranged from ~~[[about]]~~ 90°C to 130°C.

15(currently amended). The method of claim 14, wherein responsive to uniformly mixing the components of the thermoplastic elastomeric composite, the uniformly mixed components of the thermoplastic elastomeric composite are transported to a two-roll mill for rolling a predetermined ~~number~~ period of times time to form a continuous sheet with

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required thickness prior to cutting into a plurality of ~~sheet members~~ sheets with the predetermined size by means of an automatic cutter.

16(currently amended). The method of claim 15, further comprising the steps of:
stacking a ~~selected~~ predetermined weight of ~~sheet members having a required weight; and~~
~~cutting the selected weight of sheet members~~ sheets to the mold to ~~[[heat]] be heated~~ in a temperature ranged from ~~[[about]]~~ 150°C to 180°C in a pressure about 90 to 250 kg/cm²,

wherein the ~~blank~~ block is formed after heating a predetermined period of time.

17(currently amended). The method of claim 12, wherein the foaming agent is ~~selected from~~ a chemical foaming agent (~~e.g., including~~ azodicarbonamide~~[[]]]~~) or a physical foaming agent including sodium bicarbonate having a percentage ~~[[about]]~~ ranged from 1% to about 15% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

18(currently amended). The method of claim 17, wherein the crosslinking agent is ~~selected from~~ a dicumyl peroxide, 2,5-(tert-butylperoxide)-2,5-dimethylhexane or sulfur having a percentage about 0.1% to 1% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

19(currently amended). The method of claim 18, wherein the thermoplastic elastomer composite further comprises polymeric materials including styrene butadiene rubber (SBR), polystyrene (PS), ethylene vinyl acetate (EVA), low density polyethylene (LDPE), and ethylene-propylene-diene terpolymer rubber (EPDM) having a percentage about 0% to 50% of the total weight fo the ~~raw material~~ thermoplastic elastomeric composite.

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20(currently amended). The method of claim 18, wherein the thermoplastic elastomer composite further comprises ~~a accelerator~~ an accelerator for foaming agent ~~selected from a~~ including zinc oxide or urea having a percentage about 0% to 3% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.

21(currently amended). The method of claim 18, wherein the thermoplastic elastomer composite further comprises a processing agent ~~selected from~~ including stearate or hard zinc based stearate.

22(currently amended). The method of claim 18, wherein the thermoplastic elastomer composite further comprises ~~[[an]]~~ a functional additive including a coloring agent, a calcium carbonate, and wood chips.

23(currently amended). The method of claim 18, wherein the thermoplastic elastomer composite further comprises an ~~functional~~ additive ~~selected from~~ including an anti-static agent, a flame retardation agent, or a reinforced agent having a percentage ~~[[about]]~~ ranged from 0% to 50% of the total weight of the ~~raw material~~ thermoplastic elastomeric composite.